

Gottfried W. Ehrenstein

Polymeric Materials

Structure – Properties – Applications

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Hanser Publishers, Munich

Hanser/Gardner Publications, Inc., Cincinnati

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The Author:
Prof. Dr.-Ing. Dr. h.c. Gottfried W. Ehrenstein
Lehrstuhl für Kunststofftechnik Friedrich Alexander-Universität Erlangen-Nürnberg
Am Weichselgarten 9
91058 Erlangen

Translated by:
Dr. Edmund Immergut, 2, Sidney Place, Brooklyn, NY 11201, USA
Dr. Richard Theriault, General Electric Company, 1, Plastics Avenue, Pittsfield, MA 01201, USA

Cover-Page:
POM micro cog-wheel
Reference diameter: 400 μ m
Tooth number: 8
Modul: 50 μ m
(light microscopy in polarized light)

Distributed in the USA and in Canada by
Hanser Gardner Publications, Inc.
6915 Valley Avenue, Cincinnati, Ohio 45244-3029, USA
Fax: (513) 527-8950
Phone: (513) 527-8977 or 1-800-950-8977
Internet: <http://www.hansergardner.com>

Distributed in all other countries by
Carl Hanser Verlag
Postfach 86 04 20, 81631 München, Germany
Fax: +49 (89) 98 12 64
Internet: <http://www.hanser.de>

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Library of Congress Cataloging-in-Publication Data
Ehrenstein, G.W.

Polymeric materials / G.W. Ehrenstein
p. cm

Includes bibliographical references and index

ISBN 1-569900-310-7 (softcover)

1. Polymers II. Title

TA455.P58 E35 2000

620.1'92-dc21

00-046239

Die Deutsche Bibliothek - CIP-Einheitsaufnahme
Ehrenstein, Gottfried W.:

Polymeric material : structure - properties - application / Gottfried

Wilhelm Ehrenstein [Transl. by Edmund Immergut; Richard Theriault].

— Munich : Hanser; Cincinnati : Hanser Gardner, 2001

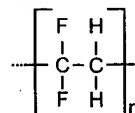
ISBN 3-446-21461-5

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Printed and bound in Germany by Kösel, Kempten

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PVDF - Polyvinylidene Fluoride**Type:** amorphous, semi-crystalline**Characteristics:** good strength, high chemical and radiation stability, high susceptibility to residual stress**Identified by:** pungent smell when burned, difficult to ignite**Structure:****Properties*:**

$\rho = 1.76 - 1.78 \text{ g/cm}^3$

$E = 2000 - 2900 \text{ MPa}$

$\sigma_Y = 50 - 60 \text{ MPa}$

$\epsilon_Y = 7 - 10\%$

$\epsilon_F = 20 - > 50\%$

$T_g = 40^\circ\text{C}$

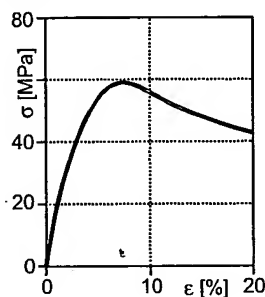
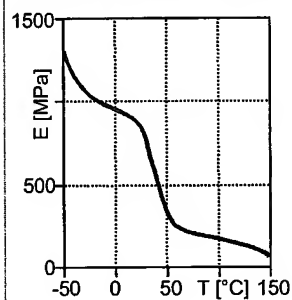
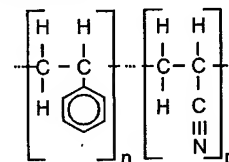
$T_{pm} = 170 - 175^\circ\text{C}$

Thermal Limits:

Short-time -

Long-time ~ 150°C

* Values for homopolymer

Stress-Strain Diagram:**Elastic Modulus f (Temp):****SAN - Styrene-Acrylonitrile Copolymer****Type:** amorphous**Characteristics:** high strength and stiffness, good dimensional stability, good chemical resistance, lower resistance against stress cracking than PS**Identified by:** yellowish, transparency, smell of styrene when burned, bright flame, soot forming**Structure:****Properties:**

$\rho = 1.08 \text{ g/cm}^3$

$E = 3500 - 3700 \text{ MPa}$

$\sigma_F = 65 - 85 \text{ MPa}$

$\epsilon_Y = -$

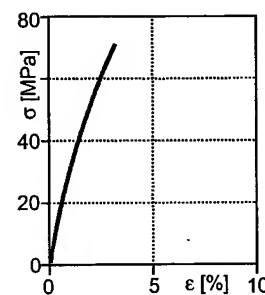
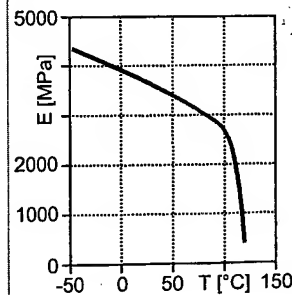
$\epsilon_F = 2.5 - 5\%$

$T_g = 95 - 105^\circ\text{C}$

Thermal Limits:

Short-time ~ 95°C

Long-time ~ 85°C

Stress-Strain Diagram:**Elastic Modulus f (Temp):**

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